

values were above 30 over the southern half of the Florida Peninsula, along the Gulf coast west of the Mississippi River, and in western and southern California.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather in January, 1893, is shown on Chart V by a line traced across the Florida Peninsula south of Titusville and Tampa, and inside the Louisiana and Texas coast line. The western limit of freezing weather is shown by a line traced from southwestern Arizona over the central valleys of California to a point on the coast north of Eureka, Cal.

RANGES OF TEMPERATURE.

The greatest daily range of temperature is shown in the table of miscellaneous meteorological data. The greatest monthly range of temperature occurred at Helena, Mont., where it was 101. From Montana the monthly ranges decreased eastward to less than 50 over Lake Michigan and on the south New England coast, southeastward to less than 30 over extreme southern Florida, and to less than 40 at Port Eads, La., and Galveston, Tex., and westward and southwestward to less than 30 in northwestern and west-central California.

COLD WAVES.

From the 1st to the 3d a cold wave advanced from the region north of eastern Montana and North Dakota to the middle Atlantic and New England states, carrying the line of zero temperature to Springfield, Ill., on the 3d, and causing the lowest temperature of the month at Northfield, Vt., —26, on the 4th.

A cold wave of marked severity over the Southern States appeared over eastern Montana and Assiniboia on the 4th and overspread the east Gulf and south Atlantic states during the 6th and 7th. On the 6th the temperature fell to 12 at Atlanta, Ga., and to 32 at Mobile, Ala. The morning of the 7th the temperature was below freezing in northern Florida, reaching 31 at Tampa, Fla., and frost was reported as far south as Jupiter, Fla.

From the 7th to the 9th a cold wave advanced from the Missouri Valley to the Southeastern States, carrying the line of freezing weather to Jacksonville, Fla. The morning of the 9th a cold wave appeared over North Dakota, from which region it advanced to the middle Atlantic and New England states by the evening of the 10th and to the Southeastern States by the morning of the 11th. On the 11th the temperature fell below zero generally in New England, the minimum was below freezing over the north part of the Florida Peninsula, and light frost was reported at Jupiter, Fla.

A cold wave appeared over Alberta on the 10th, overspread the middle Rocky Mountain region on the 11th, reached the lower Missouri and lower Mississippi valleys on the 12th, and the south Atlantic coast on the 13th. The morning of the 14th the temperature fell to freezing, and ice $\frac{1}{4}$ inch in thickness formed at Titusville, Fla., and heavy frost was reported at Jupiter, Fla.

From the 14th to the 16th a severe cold wave advanced from the middle Rocky Mountain region to the Atlantic coast. On the 15th the temperature was 10 to 15 below zero in the middle Ohio valley. On the 16th the lowest temperature on

record for January at Atlantic City, N. J., —4, was noted, and the minimum fell to —10 at Knoxville, Tenn., and to —4 at Lynchburg, Va. On the 16th and 17th the lowest January temperatures on record were reported at points in the Carolinas. On the 16th the temperature was below freezing in northern Florida. The morning of the 17th the temperature at Jacksonville, Fla., was 24, pineapples in exposed places about Jupiter, Fla., were damaged, and vegetation was reported killed to the southern extremity of the "Everglades."

From the 17th to the 20th a cold wave advanced from the middle plateau region and northeast slope of the Rocky Mountains to the Atlantic and Gulf states. From the 17th to the 20th the weather was cold generally throughout Texas. The morning of the 20th the minimum was 26 at Charleston, S. C., and 22 at Mobile, Ala.

From the 24th to the 26th a cold wave from the Northwest overspread the central valleys and the Lake region, carrying the temperature to —30 at Moorhead, Minn., on the 26th. This cold wave was not severely felt in the Atlantic coast states.

A cold wave advanced from the middle plateau region over the central valleys, the southern lake region, and the Southwest during the 28th and 29th. On the 30th a slight fall in temperature occurred in the Atlantic coast states.

The lowest temperature of the month was noted generally over the Dakotas and Montana on the 31st, and the lowest temperature on record at Helena, Mont., for January, —42, was registered. On that date the temperature was —30 to —40 in Montana and western North Dakota, reached —43 at Havre, Mont., and fell to zero in northern Kansas. On the 30th and 31st the cold was exceptionally severe in the north Pacific coast states.

FROST.

In Florida the severest frosts of the month were noted on the 7th, 14th, and 17th. On the 7th ripening strawberries, oranges, and some orange trees were frozen at Flatwood, 2 miles northeast of Eustis, Fla.; frost was reported at Jupiter; ice $\frac{1}{4}$ inch in thickness and frost were noted at Titusville; and tender vegetation about Tampa was injured by cold. Light frost killed tender vegetation about Jupiter on the 11th and 13th.

On the 14th orange trees were frozen at Flatwood, and heavy frost killed many plants about Jupiter; pineapples were not seriously damaged. At Titusville heavy frost and ice $\frac{1}{4}$ inch in thickness formed; oranges on trees back from the river were reported frozen solid. At City Point all tender vegetation and bananas and oranges exposed to the westerly wind were killed. Thin ice was reported at Fort Pierce, 92 miles south of Titusville. At Tampa the temperature fell to 31 without causing material damage to fruit.

On the 17th the temperature fell to 24 at Jacksonville, the lowest temperature noted at that station since January 4, 1887. At Titusville a large number of young fish were reported killed by cold. About Jupiter tender vegetation and pineapples in exposed places were injured, and damaging frost was reported to the southern extremity of the "Everglades." At Tampa the minimum temperature, 29, was the lowest noted at that place since 1886, and oranges in exposed places were slightly injured. On the 19th heavy frost injured tender vegetation about Galveston, Tex.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for January, 1893, as determined from reports of more than 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular sta-

tions of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean

when the precipitation is below the normal and subtracting when above.

In January the monthly precipitation is usually greatest on the extreme north Pacific coast, where it exceeds 8.00. At Neah Bay, Wash., 10 years' record, the normal amount is 17.33. On the immediate Pacific coast north of the 40th parallel and in the Sierra Nevada Mountains between the 38th and 41st parallels the average precipitation for January exceeds 8.00. It is 4.00 to 6.00 generally along the Pacific coast north of the 37th parallel. Over the eastern part of the country the greatest precipitation for January is noted at Hatteras, N. C., where it exceeds 6.00; it is more than 4.00 along the immediate middle Atlantic and New England coasts, over east-central Florida, generally in districts south of the Ohio River and east of Texas, in central Utah, and in the mountains east of San Diego, Cal. From the Lake Superior region and the British Northwest Territory to the Rio Grande, Gila, and lower Colorado valleys the monthly precipitation is less than 2.00, except over a part of the northern plateau and the central part of the middle plateau. From Minnesota, North Dakota, and eastern Montana to the Rio Grande River the normal amount is less than 1.00.

In January, 1893, the monthly precipitation was greatest on the extreme north Pacific coast, where 11.33 fell at Neah Bay, Wash. The monthly amount exceeded 8.00 in the mountains of California between the 38th and 40th parallels, and in the northern part of Santa Cruz county, California. At Saugeen, Ont., the monthly precipitation was 6.11, and the monthly amount was in excess of 4.00 generally along the immediate Pacific coast from Vancouver Island to southern California, in the mountains of central Colorado, on the Texas coast, about Corpus Christi, Tex., in western Lower Michigan, in Ontario from Georgian Bay to Lake Erie, and in Nova Scotia. Over the greater part of the country between the Mississippi River and the Sierra Nevada Mountains the monthly precipitation was less than 1.00, and over the greater part of the southern plateau, in Wyoming, and from western Texas over Kansas, Nebraska, and eastern Colorado, the monthly amount was less than 0.25.

DEPARTURE FROM NORMAL PRECIPITATION.

The monthly precipitation was generally deficient, except over the northern lake region, and from the Dakotas and the northeast slope of the Rocky Mountains over Wyoming, central Colorado, Nevada, and a part of southern California, where it was slightly in excess of the normal amount for January. The most marked deficiency was noted along the immediate north Pacific coast, where the monthly amount was 6.00 to 8.00 below the normal. The deficiency was more than 4.00 along the immediate Pacific coast north of the 40th parallel, and in an area covering Tennessee, northern Alabama, northern Mississippi, and eastern Arkansas, and was more than 2.00 at Eastport, Me., on the Carolina coast, at Jacksonville, Fla., from the west Gulf coast over the middle Mississippi and lower Ohio valleys, southern Kentucky, and the west parts of Virginia and the south Atlantic states. The greatest excess in monthly precipitation, 3.30, was reported at Los Angeles, Cal. At Saugeen, Ont., the monthly amount was more than 2.00 in excess, and at Winnipeg, Man., Fort Buford, N. Dak., and Medicine Hat, N. W. T., it was more than 1.00 in excess of the normal precipitation for January.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for January for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for January, 1893; (4) the departure of the current month from the average; (5) and the extremes for January during the period of observation and the years of occurrence:

Departure from average precipitation.

| State and station. | (1) Average for the month of Jan. | (2) Length of record. | (3) Total for Jan., 1893. | (4) Departure from average. | (5) Extremes for January. | | | |
|---------------------------|-----------------------------------|-----------------------|---------------------------|-----------------------------|---------------------------|-------|----------------|------------|
| | | | | | Greatest. | | Least. | |
| | | | | | Am't. | Year. | Am't. | Year. |
| <i>Arizona.</i> | <i>Inches.</i> | <i>Years.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> | | <i>Inches.</i> | |
| Fort Apache | 1.26 | 17 | 0.28 | - 0.98 | 3.90 | 1886 | 0.18 | 1878 |
| Fort Mohave | 0.77 | 21 | T. | - 0.77 | 4.15 | 1889 | 0.00 | " |
| Whipple Barracks | 1.40 | 21 | 1.18 | - 0.22 | 5.99 | 1886 | 0.00 | 1891 |
| <i>Arkansas.</i> | | | | | | | | |
| Keesees Ferry | 3.02 | 11 | 0.50 | - 2.52 | 7.37 | 1890 | 0.50 | 1893 |
| <i>California.</i> | | | | | | | | |
| Fort Bidwell | 3.10 | 21 | 2.60 | - 0.50 | 10.00 | 1881 | 0.00 | 1879 |
| Riverside | 1.39 | 12 | 2.87 | + 1.48 | 4.28 | 1890 | 0.00 | 1891 |
| <i>Colorado.</i> | | | | | | | | |
| Las Animas | 0.32 | 11 | 0.00 | - 0.32 | 0.85 | 1891 | 0.00 | 1893 |
| <i>Florida.</i> | | | | | | | | |
| Merritts Island | 3.40 | 15 | 1.40 | - 2.00 | 10.45 | 1878 | 0.42 | 1892 |
| <i>Georgia.</i> | | | | | | | | |
| Forsyth | 5.03 | 19 | 2.58 | - 2.45 | 10.08 | 1883 | 2.22 | 1880 |
| <i>Idaho.</i> | | | | | | | | |
| Boise Barracks | 2.34 | 19 | 0.62 | - 1.72 | 4.60 | 1872 | T. | 1889 |
| Fort Sherman | 3.10 | 10 | 0.85 | - 2.25 | 4.81 | 1890 | 0.85 | 1893 |
| <i>Indiana.</i> | | | | | | | | |
| Lafayette | 2.28 | 13 | 1.62 | - 0.66 | 6.11 | 1880 | 0.40 | 1881 |
| <i>Indian Territory.</i> | | | | | | | | |
| Fort Supply | 0.65 | 14 | 0.02 | - 0.63 | 2.67 | 1891 | 0.00 | 1887 |
| <i>Iowa.</i> | | | | | | | | |
| Cresco | 1.33 | 21 | 1.16 | - 0.17 | 3.72 | 1886 | 0.38 | 1872, 1884 |
| <i>Kansas.</i> | | | | | | | | |
| Independence | 1.68 | 21 | 0.17 | - 1.51 | 3.17 | 1890 | 0.17 | 1893 |
| Salina | 0.84 | 10 | T. | - 0.84 | 1.76 | 1890 | T. | 1893 |
| <i>Louisiana.</i> | | | | | | | | |
| Grand Coteau | 6.59 | 10 | 3.06 | - 3.51 | 13.30 | 1883 | 2.52 | 1887 |
| <i>Maine.</i> | | | | | | | | |
| Orono | 4.72 | 22 | | | 7.66 | 1891 | 2.00 | 1875 |
| <i>Maryland.</i> | | | | | | | | |
| Cumberland | 2.21 | 21 | 0.72 | - 1.49 | 3.90 | 1878 | 0.30 | 1887 |
| <i>Michigan.</i> | | | | | | | | |
| Kalamazoo | 2.30 | 17 | 1.53 | - 0.77 | 4.90 | 1876 | 1.10 | 1879 |
| <i>Missouri.</i> | | | | | | | | |
| Sedalia | 2.06 | 14 | 0.64 | - 1.42 | 4.01 | 1885 | 0.19 | 1881 |
| <i>Montana.</i> | | | | | | | | |
| Fort Custer | 0.84 | 13 | 0.67 | - 0.17 | 2.85 | 1884 | 0.08 | 1885 |
| <i>Nebraska.</i> | | | | | | | | |
| Fort Robinson | 0.62 | 9 | 0.44 | - 0.18 | 1.56 | 1892 | 0.06 | 1888 |
| Genoa (near) | 0.97 | 17 | 0.19 | - 0.78 | 2.68 | 1891 | 0.19 | 1893 |
| <i>Nevada.</i> | | | | | | | | |
| Browns | 0.69 | 22 | 0.48 | - 0.21 | 3.22 | 1875 | 0.00 | 1872, 1873 |
| Carson City | 2.32 | 16 | 3.18 | + 0.86 | 6.78 | 1875 | 0.10 | 1889, 1891 |
| <i>New Hampshire.</i> | | | | | | | | |
| Hanover | 2.94 | 22 | 1.32 | - 1.62 | 4.82 | 1887 | 0.45 | 1871 |
| <i>New Mexico.</i> | | | | | | | | |
| Deming | 0.43 | 10 | 0.19 | - 0.24 | 1.09 | 1889 | 0.00 | 1885, 1887 |
| Fort Wingate | 1.14 | 21 | 0.48 | - 0.66 | 3.30 | 1872 | 0.16 | 1881 |
| <i>New York.</i> | | | | | | | | |
| Cooperstown | 2.62 | 22 | 1.89 | - 0.73 | 5.54 | 1891 | 0.52 | 1872 |
| Plattsburg Barracks | 1.84 | 22 | 0.89 | - 0.95 | 4.30 | 1892 | 0.59 | 1888 |
| <i>North Carolina.</i> | | | | | | | | |
| Lenoir | 4.49 | 21 | 2.31 | - 2.18 | 9.60 | 1878 | 1.10 | 1890 |
| <i>Oklahoma.</i> | | | | | | | | |
| Fort Reno | 0.93 | 8 | 0.30 | - 0.63 | 2.04 | 1890 | 0.00 | 1887 |
| Fort Sill | 1.09 | 21 | 2.95 | + 1.86 | 3.80 | 1891 | 0.00 | 1871, 1887 |
| <i>Oregon.</i> | | | | | | | | |
| Bandon | 11.24 | 15 | | | 20.75 | 1890 | 4.60 | 1884 |
| <i>Pennsylvania.</i> | | | | | | | | |
| Dyberry | 3.20 | 22 | 2.12 | - 1.08 | 5.65 | 1892 | 0.70 | 1872 |
| Grampian | 3.74 | 22 | 4.12 | + 0.38 | 5.47 | 1888 | 1.21 | 1872 |
| Wellabore | 6.23 | 13 | 4.92 | - 1.31 | 12.17 | 1886 | 1.98 | 1890 |
| <i>South Carolina.</i> | | | | | | | | |
| Statesburg | 3.77 | 11 | 2.76 | - 1.01 | 6.65 | 1892 | 0.90 | 1890 |
| <i>South Dakota.</i> | | | | | | | | |
| Fort Sully | 0.44 | 22 | 0.90 | + 0.46 | 1.03 | 1887 | T. | 1872 |
| <i>Texas.</i> | | | | | | | | |
| Austin | 2.44 | 21 | 0.45 | - 1.99 | 8.03 | 1889 | 0.00 | 1875 |
| Silver Falls | 0.87 | 5 | 0.76 | - 0.11 | 1.28 | 1891 | 0.44 | 1888 |
| <i>Utah.</i> | | | | | | | | |
| Terrace | 0.58 | 21 | 1.20 | + 0.62 | 2.15 | 1875 | 0.00 | " |
| <i>Vermont.</i> | | | | | | | | |
| Stratford | 3.67 | 19 | 1.90 | - 1.77 | 6.10 | 1891 | 1.70 | 1878 |
| <i>Virginia.</i> | | | | | | | | |
| Dale Enterprise | 3.03 | 13 | 1.14 | - 1.89 | 5.96 | 1886 | 0.57 | 1890 |
| <i>Washington.</i> | | | | | | | | |
| Fort Townsend | 2.68 | 18 | 1.69 | - 0.99 | 4.65 | 1890 | 1.00 | 1875 |
| <i>West Virginia.</i> | | | | | | | | |
| Parkersburg | 3.46 | 7 | | | 6.75 | 1885 | 1.54 | 1887 |
| <i>Wisconsin.</i> | | | | | | | | |
| Embarrass | 2.41 | 22 | | | 4.65 | 1880 | 0.55 | 1879 |
| Madison | 1.92 | 22 | 1.06 | - 0.86 | 3.65 | 1874 | 0.40 | 1878 |
| <i>Wyoming.</i> | | | | | | | | |
| Fort Washakie | 0.63 | 10 | 0.05 | - 0.58 | 1.43 | 1891 | 0.04 | 1886 |

Considered by districts the average percentage of the normal in districts where the precipitation was deficient was about as follows: middle-eastern slope of the Rocky Mountains, 6; west Gulf states, 22; northern plateau, 28; Missouri Valley, 41; upper Mississippi valley, 46; Ohio Valley and Tennessee, 49; north Pacific coast, 50; east Gulf states, 53; southern plateau, 56; south Atlantic states, 59; middle Atlantic states and middle Pacific coast, 60; New England, 62;

lower lake region, 67; southeast slope of the Rocky Mountains, 76. In districts where the monthly precipitation was in excess the percentage of the normal was about as follows: Extreme northwest, 158; south Pacific coast, and at Key West, Fla., 139; middle plateau, 119. In the upper lake region and on the northeast slope of the Rocky Mountains the monthly precipitation averaged about normal.

YEARS OF GREATEST PRECIPITATION FOR JANUARY.

At Moorhead, Minn., and Fort Buford, N. Dak., the precipitation for the current month was the greatest reported for January during the respective periods of observation. In an area extending from central Arkansas over eastern Missouri, central Illinois, central Indiana, and central Ohio the greatest precipitation for January was noted in 1890; in an area extending from eastern Kentucky to the west Gulf coast in 1882; over northern California in 1878; and along the middle and lower Ohio river in 1876.

YEARS OF LEAST PRECIPITATION FOR JANUARY.

At Northfield, Vt., Galveston, San Antonio, and El Paso, Tex., Shreveport, La., Little Rock and Keesees Ferry, Ark., Memphis, Nashville, and Chattanooga, Tenn., Cairo and Springfield, Ill., Saint Louis, Mo., Des Moines, Iowa, Leavenworth, Salina, and Independence, Kans., Genoa (near), Nebr., Denver and Las Animas, Colo., Spokane and Olympia, Wash., and Portland, Oregon, the precipitation for the current month was the least reported for January during the respective periods of observation. On the northeast slope of the Rocky Mountains the least precipitation for January was noted in 1891; on the Pacific coast north of the 38th parallel in 1889; over the southern Rocky Mountain and southern plateau regions and along the south Pacific coast in 1887; and from the middle Ohio river to the Atlantic coast between the 38th and 40th parallels in 1872.

EXCESSIVE PRECIPITATION.

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in January, 1893:

Monthly precipitation to equal or exceed 10.00.

| State. | Number of stations. | State. | Number of stations. |
|------------------|---------------------|------------------|---------------------|
| California | 3 | Washington | 1 |

Precipitation to equal or exceed 2.50 in 24 hours.

| State. | Number of stations. | Dates. | State. | Number of stations. | Dates. |
|-------------------|---------------------|--|----------------------|---------------------|--------|
| California | 17 | 16, 26, 26-27, 27, 29-30, 30, 30-31, 31. | Florida | 1 | 24. |
| Georgia | 4 | 6, 18, 18-19, 19. | Nevada | 1 | 30. |
| Mississippi | 4 | *31-1, 1, 16-17. | Oklahoma | 1 | 17. |
| Alabama | 3 | 17, 18, 18-19. | Oregon | 1 | 17. |
| Louisiana | 2 | 17-18. | South Carolina | 1 | 18-19. |
| Washington | 2 | 3-4. | Texas | 1 | 25-26. |
| | | | Virginia | 1 | 1. |

Precipitation to equal or exceed 1.00 in 1 hour.

| | | | | | |
|-------------|---|-----|--|--|--|
| Texas | 1 | 26. | | | |
|-------------|---|-----|--|--|--|

* December 31, 1892-January 1, 1893.

Table of excessive precipitation, January, 1893.

| State and station. | Monthly rainfall to inches, or more. | Rainfall 2.50 inches, or more, in 24 hours. | | Rainfall 1 inch, or more, in one hour. | | |
|----------------------------|---|--|-------|--|--------------|------------|
| | | Amt. | Day. | Amt. | Time. | Day. |
| <i>Alabama.</i> | | | | | | |
| Brewton..... | <i>Inches.</i> | 2.82 | 18-19 | <i>Inches</i> | <i>h. m.</i> | <i>Day</i> |
| Healing Springs..... | | 2.70 | 17 | 1.00 | 1 00 | 12 |
| Union Springs a..... | | 2.55 | 18 | | | |
| <i>California.</i> | | | | | | |
| Boulder Creek..... | 10.04 | | | | | |
| Claremont..... | | 3.90 | 31 | | | |
| Collegrove..... | | 4.66 | 30-31 | | | |
| Duarte..... | | 5.47 | 30-31 | | | |
| Edmonton..... | 11.47 | 3.60 | 26 | | | |
| Georgetown..... | | 2.65 | 16 | | | |
| Do..... | | 3.15 | 26-27 | | | |
| Glendora..... | 11.70 | 6.75 | 30 | | | |
| Grass Valley a..... | | 2.56 | 27 | | | |
| Grass Valley b..... | | 2.56 | 27 | | | |
| Los Angeles (W.B.)..... | | 3.29 | 30-31 | | | |
| Los Gatos b..... | | 4.87 | 26-27 | | | |
| Do..... | | 2.85 | 29-30 | | | |
| Mount Glenwood..... | | 3.38 | 27 | | | |
| Nevada City..... | | 2.78 | 27 | | | |
| Northhoff..... | | 2.67 | 30-31 | | | |
| Oleta..... | | 4.00 | 26-27 | | | |
| Pasadena..... | | 5.34 | 30-31 | | | |
| Rialto..... | | 2.57 | 30 | | | |
| Santa Barbara a..... | | 2.66 | 30 | | | |
| <i>Florida.</i> | | | | | | |
| Hypoluxo..... | | 2.76 | 24 | | | |
| <i>Georgia.</i> | | | | | | |
| Camak..... | | 2.50 | 18 | | | |
| Dublin..... | | 2.73 | 18-19 | | | |
| Louisville..... | | 2.54 | 19 | | | |
| Marshallville..... | | 3.40 | 16 | | | |
| <i>Louisiana.</i> | | | | | | |
| Clinton..... | | 2.90 | 17-18 | | | |
| Houma..... | | 2.80 | 17-18 | | | |
| <i>Mississippi.</i> | | | | | | |
| Batesville..... | | 3.60 | 1 | | | |
| Greenville a..... | | 3.57 | • | | | |
| Greenville b..... | | 3.32 | • | | | |
| Hattiesburg..... | | 3.42 | 16-17 | | | |
| <i>Nevada.</i> | | | | | | |
| Palmetto..... | | 2.50 | 30 | | | |
| <i>Oklahoma Territory.</i> | | | | | | |
| Fort Sill..... | | 2.60 | 17 | | | |
| <i>Oregon.</i> | | | | | | |
| Langlois..... | | 2.98 | 14 | | | |
| <i>South Carolina.</i> | | | | | | |
| Trial..... | | 3.55 | 18-19 | | | |
| <i>Texas.</i> | | | | | | |
| Corpus Christi..... | | 2.51 | 25-26 | 1.85 | 1 00 | 26 |
| <i>Virginia.</i> | | | | | | |
| Avon..... | | 3.40 | 1 | | | |
| <i>Washington.</i> | | | | | | |
| Neah Bay..... | 11.33 | 4.83 | 3-4 | | | |
| Tatoosh Island..... | | 4.50 | 3-4 | | | |

Received too late for publication in December, 1892.

| | | | | | | |
|-----------------------|-------|------|----|--|--|--|
| <i>Arkansas.</i> | | | | | | |
| Arkansas City | | 2.55 | 31 | | | |
| <i>California.</i> | | | | | | |
| Mount Glenwood | 14.72 | 2.55 | 3 | | | |
| Do | | 5.50 | 24 | | | |
| San Luis Obispo | | 2.63 | 24 | | | |

* December 31, 1892-January 1, 1893.

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during January, 1893, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Maximum rainfall in one hour or less.

| Station. | Maximum fall in— | | | | | |
|------------------------|------------------|--------|---------|--------|---------|-------|
| | 5 min. | Date. | 10 min. | Date. | 1 hour. | Date. |
| Atlanta, Ga. | Inch. | | Inch. | | Inch. | |
| Bismarck, N. Dak. | 0.07 | 14, 28 | 0.70 | 14, 28 | 0.29 | 14 |
| Boston, Mass. | | | | | | |
| Buffalo, N. Y. | | | | | | |
| Cincinnati, Ohio. | | | | | | |
| Chicago, Ill. | | | | | | |
| Cleveland, Ohio. | | | | | | |
| Denver, Colo. | | | | | | |
| Detroit, Mich. | | | | | | |
| Dodge City, Kans. | | | | | | |
| Duluth, Minn. | | | | | | |
| Eastport, Me. | | | | | | |

Maximum rainfall in one hour or less—Continued.

| Station. | Maximum fall in— | | | | | |
|--------------------------|------------------|-------|---------|-------|---------|-------|
| | 5 min. | Date. | 10 min. | Date. | 1 hour. | Date. |
| | Inch. | | Inch. | | Inch. | |
| Galveston, Tex. | 0.03 | 18 | 0.05 | 18 | 0.06 | 18 |
| Indianapolis, Ind. | 0.05 | 19 | 0.07 | 19 | 0.22 | 19 |
| Jacksonville, Fla. | 0.10 | 29 | 0.20 | 29 | 0.33 | 29 |
| Jupiter, Fla. | 0.12 | 1 | 0.20 | 24 | 0.62 | 24 |
| Kansas City, Mo. | 0.12 | 1 | 0.20 | 24 | 0.62 | 24 |
| Key West, Fla. | 0.12 | 1 | 0.20 | 24 | 0.62 | 24 |
| Marquette, Mich. | 0.06 | 18 | 0.09 | 18 | 0.18 | 18 |
| Memphis, Tenn. | 0.11 | 1 | 0.15 | 1 | 0.30 | 1 |
| Milwaukee, Wis. | 0.09 | 29 | 0.17 | 29 | 0.39 | 29 |
| New Orleans, La. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| New York, N. Y. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Norfolk, Va. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Omaha, Nebr. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Philadelphia, Pa. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Philadelphia Water Works | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Pittsburg, Pa. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Portland, Oregon | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Saint Louis, Mo. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Saint Paul, Minn. | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| Salt Lake City, Utah | 0.02 | 2 | 0.04 | 2 | 0.12 | 2 |
| San Diego, Cal. | 0.03 | 27 | 0.05 | 27 | 0.11 | 30 |
| San Francisco, Cal. | 0.03 | 27 | 0.05 | 27 | 0.11 | 30 |
| Savannah, Ga. | 0.07 | 19 | 0.11 | 19 | 0.31 | 19 |
| Tampa, Fla. | 0.03 | 1 | 0.05 | 1 | 0.15 | 1 |
| Washington, D. C. | 0.03 | 1 | 0.05 | 1 | 0.15 | 1 |
| Wilmington, N. C. | 0.06 | 1 | 0.09 | 1 | 0.31 | 1 |

* Record incomplete on account of snow.

† Self-register out of order.

‡ Less than 0.05 in 1 hour.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for January during the last 23 years:

Excessive monthly precipitation.

| State. | No. years noted. | State. | No. years noted. |
|----------------|------------------|----------------------|------------------|
| California | 16 | Ohio | 1 |
| Washington | 14 | South Carolina | 1 |
| Oregon | 13 | Arizona | 0 |
| Louisiana | 8 | Colorado | 0 |
| Georgia | 8 | The Dakotas | 0 |
| North Carolina | 8 | Delaware | 0 |
| New York | 7 | District of Columbia | 0 |
| Tennessee | 7 | Idaho | 0 |
| Alabama | 7 | Indian Territory | 0 |
| Texas | 7 | Iowa | 0 |
| Mississippi | 5 | Maine | 0 |
| Arkansas | 4 | Maryland | 0 |
| Indiana | 3 | Michigan | 0 |
| Massachusetts | 3 | Minnesota | 0 |
| Florida | 3 | Montana | 0 |
| Illinois | 3 | Nebraska | 0 |
| New Jersey | 2 | New Mexico | 0 |
| Virginia | 2 | Pennsylvania | 0 |
| Connecticut | 1 | Rhode Island | 0 |
| Kansas | 1 | Utah | 0 |
| Kentucky | 1 | Vermont | 0 |
| Missouri | 1 | West Virginia | 0 |
| Nevada | 1 | Wisconsin | 0 |
| New Hampshire | 1 | Wyoming | 0 |

Excessive daily precipitation (24 hours).

| | | | |
|----------------|----|----------------------|---|
| Louisiana | 15 | Missouri | 3 |
| Tennessee | 14 | Indian Territory | 3 |
| North Carolina | 13 | Arizona | 2 |
| Texas | 12 | Maine | 2 |
| Georgia | 12 | Maryland | 2 |
| Florida | 10 | Nevada | 2 |
| Oregon | 9 | New Hampshire | 2 |
| California | 9 | Utah | 2 |
| Mississippi | 9 | Delaware | 1 |
| Alabama | 8 | Idaho | 1 |
| Virginia | 7 | Michigan | 1 |
| Washington | 7 | Nebraska | 1 |
| Massachusetts | 6 | Vermont | 1 |
| New York | 6 | Colorado | 0 |
| South Carolina | 6 | District of Columbia | 0 |
| Arkansas | 5 | The Dakotas | 0 |
| Illinois | 5 | Kansas | 0 |
| Indiana | 5 | Minnesota | 0 |
| Ohio | 5 | Montana | 0 |
| Pennsylvania | 5 | New Mexico | 0 |
| Kentucky | 4 | Rhode Island | 0 |
| New Jersey | 4 | West Virginia | 0 |
| Connecticut | 3 | Wisconsin | 0 |
| Iowa | 3 | Wyoming | 0 |

Excessive hourly precipitation.

| State. | No. years noted. | State. | No. years noted. |
|----------------------|------------------|----------------|------------------|
| Texas | 3 | Michigan | 0 |
| Illinois | 1 | Massachusetts | 0 |
| Alabama | 1 | Minnesota | 0 |
| California | 1 | Mississippi | 0 |
| Florida | 1 | Missouri | 0 |
| Georgia | 1 | Montana | 0 |
| North Carolina | 1 | Nebraska | 0 |
| Tennessee | 1 | Nevada | 0 |
| Arkansas | 0 | New Hampshire | 0 |
| Arizona | 0 | New Jersey | 0 |
| Colorado | 0 | New Mexico | 0 |
| Connecticut | 0 | New York | 0 |
| The Dakotas | 0 | Ohio | 0 |
| Delaware | 0 | Oregon | 0 |
| District of Columbia | 0 | Pennsylvania | 0 |
| Idaho | 0 | Rhode Island | 0 |
| Indiana | 0 | South Carolina | 0 |
| Indian Territory | 0 | Utah | 0 |
| Iowa | 0 | Vermont | 0 |
| Kansas | 0 | Virginia | 0 |
| Kentucky | 0 | Washington | 0 |
| Louisiana | 0 | West Virginia | 0 |
| Maine | 0 | Wisconsin | 0 |
| Maryland | 0 | Wyoming | 0 |

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for January during the last 23 years:

Monthly.

| Station and state. | Am't. | Year. | Station and state. | Am't. | Year. |
|---------------------|---------|-------|----------------------|---------|-------|
| | Inches. | | | Inches. | |
| Upper Mattole, Cal. | 41.63 | 1888 | Astoria, Oregon | 22.16 | 1871 |
| Do. | 33.40 | 1889 | Iowa Hill, Cal. | 20.87 | 1889 |
| Neah Bay, Wash. | 30.50 | 1874 | Cisco, Cal. | 20.86 | 1881 |
| Emigrant Gap, Cal. | 25.69 | 1881 | Red Bluff, Cal. | 20.71 | 1878 |
| Bedding, Cal. | 22.69 | 1878 | Calistoga, Cal. | 20.64 | 1878 |
| Neah Bay, Wash. | 22.30 | 1887 | Tatoush L. H., Wash. | 20.50 | 1871 |
| Ferndale, Cal. | 22.17 | 1889 | Alta, Cal. | 20.00 | 1881 |

Daily (24 hours).

| Station and state. | Amount. | Date. | Station and state. | Amount. | Date. |
|------------------------|---------|-------------|----------------------|---------|-------------|
| | Inches. | | | Inches. | |
| Upper Mattole, Cal. | 31.68 | 27-31, 1888 | Shreveport, La. | 5.71 | 13, 1885 |
| Bay Saint Louis, Miss. | 11.10 | 10-14, 1892 | Fostoria, Tenn. | 5.70 | 14-15, 1885 |
| Montgomery, Ala. | 9.08 | 12-13, 1892 | Daphne, Ala. | 5.62 | 11-13, 1892 |
| Canton, Ga. | 8.95 | 10-13, 1892 | Resaca, Ga. | 6.11 | 12-13, 1892 |
| Hydesville, Cal. | 8.86 | 28-31, 1888 | Clintonville, Ala. | 5.50 | 23-24, 1885 |
| Brewton, Ala. | 8.55 | 12-13, 1892 | Julian, Cal. | 5.50 | 28-29, 1892 |
| Point Pleasant, La. | 8.40 | 1-2, 1886 | Dale Enterprise, Va. | 4.49 | 8-9, 1886 |
| Fort Ross, Cal. | 8.20 | 1-2, 1892 | Duarte, Cal. | 4.47 | 30, 1893 |
| Wiggins, Ala. | 7.47 | 11-13, 1892 | Mahogany Plane, Pa. | 4.43 | 4-5, 1886 |
| Emory Grove, Md. | 7.00 | 30, 1879 | Fort Barrancas, Fla. | 4.43 | 12-13, 1892 |
| Portland, Oregon | 6.86 | 5-6, 1883 | Cheneyville, La. | 4.40 | 29, 1891 |
| Rome, Ga. | 6.83 | 11-13, 1892 | Pasadena, Cal. | 4.34 | 30-31, 1893 |
| Greensboro, Ala. | 6.77 | 2-3, 1886 | Pana, Ill. | 4.23 | 22 |
| Glendora, Cal. | 6.75 | 30, 1893 | Marietta, Ga. | 4.20 | 12-14, 1892 |
| Clarksville, Tex. | 6.52 | 1875 | Fulton, Ark. | 4.17 | 1, 1890 |
| Marion, Ala. | 6.50 | 2-3, 1886 | Cairo, Ill. | 4.10 | 17-18, 1876 |
| Huntsville, Tex. | 6.45 | 2, 1890 | Fallasee Falls, Ala. | 4.10 | 12-13, 1892 |
| Jupiter, Fla. | 6.38 | 11-12, 1889 | Kenton, Ohio | 4.10 | 27-28, 1876 |
| Neah Bay, Wash. | 6.15 | 6-7, 1885 | Forestville, Cal. | 3.08 | 1, 1892 |
| Diamond, Ga. | 6.07 | 12-13, 1892 | Tuscaloosa, Ala. | 3.00 | 2-3, 1886 |
| Fayette, Miss. | 6.00 | 6, 1883 | Delhi, La. | 3.00 | 22-23, 1887 |
| Fayetteville, N. C. | 6.00 | 8-9, 1879 | Point Pleasant, La. | 3.00 | 7-8, 1886 |
| Houston, Tex. | 5.89 | 7-8, 1891 | Jeanerette, La. | 3.00 | 8, 1891 |
| Oxanna, Ala. | 5.74 | 11-12, 1892 | Lake Charles, La. | 3.00 | 8, 1891 |
| Jackson Barracks, La. | 5.72 | 11-12, 1892 | Mount Willing, Ala. | 3.00 | 12, 1892 |

December 31, 1889—January 1, 1890.

One hour or less.

| Station and state. | Amount. | Time. | Date. |
|--------------------|---------|-------|----------|
| | Inches. | h. m. | |
| Galveston, Tex. | 0.25 | 0 05 | 15, 1890 |
| Key West, Fla. | 0.25 | 0 05 | 22, 1891 |
| Jacksonville, Fla. | 0.23 | 0 05 | 11, 1892 |
| Atwood, Ill. | 4.36 | 1 00 | 12, 1890 |

snow (in inches and tenths).

Chart V shows the depth of snowfall reported for the month.

The heaviest snowfall for the month, 79.0, was noted at Summit, Cal. 58.0 fell at Pikes Peak, Colo. A depth of 40.0 to 50.0 was reported in the mountains of Colorado, and in southwestern Lower Michigan, extreme north-central Indiana, and at Oswego, N. Y., and 30.0 to 40.0 fell at Oakland, Md., in western Lower Michigan and the interior of eastern Upper Michigan, at Sandy Lake Dam, Minn., at Palmetto, Nev., and Port Angeles, Wash. At Calais, Me., in an area covering central and northern New Jersey and southeastern Pennsylvania, at points in central New York and near eastern Lake Ontario, in central North Carolina and thence to southeastern Virginia, in an area covering northeastern Ohio and the Alleghany Mountain region from northwestern Pennsylvania to extreme eastern Tennessee, generally over Upper and Lower Michigan, and thence over eastern Indiana and western Ohio the monthly snowfall exceeded 20.0. The depth of snowfall also exceeded 20.0 in north-central Minnesota, in adjoining parts of northwestern North Dakota and northeastern Montana, at stations in the middle Rocky Mountain region, in northeastern Nevada, in the Sierra Nevada Mountains, and in northwestern Washington. The monthly snowfall exceeded 10.0 generally in the middle Atlantic and New England states, in northern portions of the south Atlantic and Gulf states, in central Arkansas, in the Ohio, extreme upper Mississippi and the Red River of the North valleys, in the Lake region, on the north Pacific coast, and in areas in the middle and northern Rocky Mountain regions. Trace of snow was noted over the north part of the Florida Peninsula and to the immediate middle Gulf coast during the storm of the 18-19th. Trace of snow was also noted near San Antonio, Tex.

On the 5th and 6th heavy snow impeded railroad traffic in southern New England, eastern New York, eastern Pennsylvania, and New Jersey. Along the middle Atlantic and New England coasts vessels were snowbound. A heavy snowstorm, with high wind, prevailed in Upper Michigan and western Lower Michigan from the 8th to 10th; at Marquette snow drifted to a depth of 4 to 5 feet; at Manistee business was practically suspended; railroad traffic was interfered with about Grand Haven. On the 10th drifting snow interfered with railroad traffic in Pennsylvania. On the 10-11th drifted snow delayed trains about Oswego, N. Y. On the 13th snow interrupted railroad and street traffic at Buffalo, N. Y. At Columbia, S. C., snow fell from 11 a. m. to 1 p. m., 18th. On the 13th and 14th drifting snow delayed trains at Dubuque, Iowa. On the 14th heavy snow interrupted traffic and telegraphic communication at Cincinnati, Ohio. Heavy, drifting snow impeded railroad travel about Oswego, N. Y., on the 15th and 16th.

From the 17th to the 19th an exceptionally heavy snowstorm extended eastward over the Gulf and south Atlantic states. At Little Rock, Ark., the snowfall, 13 inches, was the heaviest on record at that station.

The following table shows the time of beginning and ending, and the total depth of snow reported during this storm, at stations in the south Atlantic and east Gulf states and Arkansas:

Snowfall in Southern States during January 17-19, 1893.

| Station. | Beginning and ending. | Depth. |
|------------------------|---------------------------------------|--------|
| <i>North Carolina.</i> | | |
| Charlotte | 10.35 a. m., 18th, to noon, 19th | 7.5 |
| Raleigh | 4.30 p. m., 18th, to 1.20 p. m., 19th | 12.0 |
| Kittyhawk | 9 p. m., 18th, to 1 a. m., 19th | 4.0 |
| Southport | At intervals, 18-19th | 1.1 |
| Chapel Hill | a. m. to 3 p. m., 18th | 8.0 |
| Fayetteville | 2.50 p. m., 19th, to a. m., 20th | 5.2 |
| Lillington | 3 p. m., 18th, to 8 a. m., 19th | 11.5 |
| Louisburg | 6 p. m., 18th, to 2 p. m., 19th | 12.0 |
| Mount Holly | 11 a. m., 18th, to 1 p. m., 19th | 8.0 |
| Oak Ridge | 1 p. m., 18th, to a. m., 19th | 6.0 |
| Smithfield | 5 p. m., 18th, to 2 p. m., 19th | 9.0 |
| Douglas | 11 a. m., 18th, to a. m., 19th | 6.5 |
| Salisbury | a. m., 18th, to a. m., 19th | 7.0 |
| Highlands | 6 a. m., 18th, to night | 8.0 |

Snowfall in Southern States—Continued.

| Station. | Beginning and ending. | Depth. |
|-------------------------------|--|--------|
| <i>North Carolina—Cont'd.</i> | | |
| Horse Cove | 7 a. m. to midnight, 18th | 7.4 |
| Tarboro | 6.30 p. m., 18th, to 2.30 p. m., 19th | 6.0 |
| Littleton | 18th | 6.0 |
| Weldon | 8 p. m., 18th, to 12.30 p. m., 19th | 7.0 |
| Marion | 18th | 6.0 |
| Mount Pleasant | 11 a. m., 18th, to noon, 19th | 9.0 |
| Soapstone Mount | 11 a. m., 18th, to 10 a. m., 19th | 9.0 |
| Wileyton | a. m., 19th, to noon | 5.5 |
| Columbus | 17-18th | 6.0 |
| Pittsboro | 2 p. m., 18th, to 11 a. m., 19th | 12.0 |
| <i>South Carolina.</i> | | |
| Charleston | 9 a. m. to 3.08 p. m., 18th | 1.9 |
| Columbia | 9 a. m., 18th, to 6 a. m., 19th | 4.0 |
| Aiken | 10 a. m., 18th, to 2.30 a. m., 19th | 7.5 |
| Simpsonville | 9.15 a. m., 18th, to 9.30 a. m., 19th | 7.0 |
| Greenville | 19-20th | 8.5 |
| Greenwood | 18th | 5.5 |
| Anderson | 19th | 9.0 |
| Longshore | 18-19th | 8.0 |
| <i>Georgia.</i> | | |
| Atlanta | 3 a. m., 18th, to a. m., 19th | 9.5 |
| Augusta | 9 a. m., 18th, to 11.30 a. m., 19th | 3.5 |
| Savannah | 6 a. m. to 12.30 p. m., 18th | 1.0 |
| Lafayette | a. m., 18th, to a. m., 20th | 10.0 |
| Athens | Early a. m. to 10 a. m., 18th | 10.0 |
| Adairsville | a. m., 18th, to 6.30 a. m., 19th | 11.0 |
| Dahlonega | 6 a. m., 18th, to 8 a. m., 19th | 12.0 |
| Forsyth | 3 a. m., 18th, to 8 a. m., 19th | 4.0 |
| Gillsville | 5 a. m., 18th, to 7 a. m., 19th | 11.0 |
| Hephzibah | 9 a. m. to 11 p. m., 19th | 4.5 |
| Lagrange | 18-19th | 5.5 |
| Point Peter | 6 a. m., 18th, to 10 a. m., 19th | 9.0 |
| Diamond | 5 a. m., 18th, to 7 a. m., 19th | 5.4 |
| Lithia Springs | 18-19th | 7.0 |
| Louisville | 19th | 4.0 |
| Marietta | 4 a. m., 18th, to 9 a. m., 19th | 9.0 |
| Milledgeville | 18-19th | 4.5 |
| Rome | 3 a. m., 18th, to 1 a. m., 19th | 2.5 |
| Toccoa | 18th | 10.0 |
| Union Point | 19th | 6.8 |
| Washington | 18th | 8.0 |
| Resaca | 4 a. m., 18th, to 3 a. m., 19th | 9.0 |
| Whitesburg | 3 a. m., 18th, to 8 a. m., 19th | 7.0 |
| Canton | 4 a. m., 18th, to 7 a. m., 19th | 10.0 |
| <i>Alabama.</i> | | |
| Mobile | 5.55 to 9.30 p. m., 17th | 1.0 |
| Montgomery | a. m., 18th, to a. m., 19th | 2.2 |
| Auburn | 3 a. m. to 6 p. m., 18th | 2.0 |
| Talladega | Early a. m. to 6.30 a. m., 18th | 7.0 |
| Tusculum | 11.15 p. m., 17th, to 7 a. m., 18th | 10.0 |
| Gadsden | 2 a. m., 18th, to 5.30 a. m., 19th | 13.5 |
| Decatur | 11.30 p. m., 17th, to 10 p. m., 18th | 10.0 |
| Florence | Early a. m. to 5 p. m., 18th | 7.5 |
| Lynn | Early a. m., 18th, to a. m., 19th | 9.3 |
| Scottsboro | 11 p. m., 17th, to 4 p. m., 18th | 8.0 |
| Cordova | a. m., 18th, to a. m., 19th | 8.0 |
| Warrior | a. m., 18th, to a. m., 19th | 9.0 |
| Florence | 18th | 10.5 |
| Fayette | 17-18th | 10.0 |
| Oxanna | 1 a. m., 18th, to 6 a. m., 19th | 9.9 |
| <i>Mississippi.</i> | | |
| Meridian | 8.10 p. m., 17th, to 4 a. m., 18th | 2.0 |
| University | 9.30 p. m., 17th, to 6 p. m., 18th | 11.0 |
| Vicksburg | 4.05 p. m., 17th, to a. m., 19th | 3.4 |
| Duck Hill | 17-18th | 8.7 |
| Hattiesburg | 2.10 p. m., 16th, to 11.40 p. m., 17th | 4.5 |
| Louisville | 8 p. m., 17th, to p. m., 18th | 6.5 |
| Okolona | 9 p. m., 17th, to 5 p. m., 18th | 10.0 |
| Palo Alto | 9 p. m., 17th, to 5 p. m., 18th | 8.0 |
| Clarksdale | 7 p. m., 17th, to 11 a. m., 18th | 10.0 |
| Pontotoc | 9 p. m., 17th, to 8 p. m., 18th | 12.0 |
| Greenville | 5 p. m., 17th, to 2 p. m., 18th | 4.0 |
| Agricultural College | 7 p. m., 16th, to 7 a. m., 17th | 5.0 |
| Batesville | 8.30 p. m., 17th, to noon, 18th | 8.0 |
| Columbus | a. m., 18th, to a. m., 19th | 7.0 |
| Corinth | On 17th | 10.0 |
| <i>Arkansas.</i> | | |
| Little Rock | 5 p. m., 17th, to 10.52 a. m., 18th | 13.0 |
| Fort Smith | 10 a. m., 17th, to a. m., 18th | 10.5 |
| Kirby | Midnight, 17th, to 2 a. m., 18th | 12.0 |
| Ozark | 11.30 a. m. to 11.30 p. m., 17th | 9.0 |
| Stuttgart | 6 p. m., 17th, to 2 a. m., 18th | 12.0 |
| Brinkley | 7 p. m., 17th, to a. m., 18th | 11.0 |
| New Gascony | 4 p. m., 17th, to 6 a. m., 18th | 10.0 |
| Dallas | 4 a. m. to 10 p. m., 17th | 10.0 |
| Pine Bluff | 4 p. m., 17th, to a. m., 18th | 11.0 |
| Forrest | 7 p. m., 17th, to 4 a. m., 18th | 9.5 |
| Winslow | 10.30 a. m. to midnight, 17th | 7.5 |
| Conway | 3 p. m., 17th, to 4 a. m., 18th | 10.2 |
| Fayetteville | 11 a. m., 17th, to a. m., 18th | 7.8 |
| Keesee Ferry | 3 p. m., 17th, to a. m., 18th | 5.8 |
| Madding | 17th | 11.0 |
| Rogers | Noon to 10 p. m., 17th | 8.0 |
| Warren | 18th | 6.0 |

On the 29th high wind drifted snow to a depth of 5 feet about Sault Ste. Marie, Mich. On the 31st snow, drifted by high northwest wind, interfered with traffic about Duluth, Minn.

DEPTH OF SNOW ON GROUND ON THE 15TH AND AT THE CLOSE OF THE MONTH.

Chart VI shows the depth of snow reported on the ground

on the 15th. In northern New England, northern New Jersey, at points in eastern Pennsylvania, in western Pennsylvania and western New York, in the middle and upper Ohio valleys, eastern Kentucky, extreme eastern Tennessee, in the mountains of West Virginia, western Virginia, and western North Carolina, in the Lake region and extreme upper Mississippi valley, in north-central North Dakota, and at mountain stations in Colorado a depth to exceed 10.00 was noted on the 15th. In an area extending over western Lower Michigan, eastern Upper Michigan, and northern Indiana a depth of more than 20.00 was reported. Trace of snow was reported in the northern and western portions of the south Atlantic states, in central and eastern Tennessee, southeastern Kansas, northern New Mexico, Utah, and Nevada, and in interior and eastern parts of Oregon and Washington.

Chart VII shows the depth of snow reported on the ground at the close of the month. In extreme northern and eastern Upper Michigan, and at Manistee, Mich., Blue Knob, Pa., Koepenick, Wis., Martin, Idaho, Elk Park, Mont., and Waterville, Wash., a depth of 30.00, or more, was reported. In northern Lower Michigan, eastern and northern Upper Michigan, in interior and north-central parts of Wisconsin, at Dubuque, Iowa, Humphrey and Palermo, N. Y., and Kingwood, W. Va., in west-central Minnesota, and at Port Angeles, Wash., a depth of 20.00, or more, was noted. The ground was covered by 10.00, or more, generally in New Hampshire and Vermont, in areas in interior and western New York, at points in the mountain districts of Pennsylvania, Maryland, and West Virginia, and generally in the upper lake region, except in southeastern Lower Michigan and on the southwest shore of Lake Michigan. The depth also exceeded 10.00 in the extreme upper Mississippi valley, in northern North Dakota and northeastern Montana, at points in the mountains of Colorado and north-central New Mexico, in an area extending from western Montana over Idaho and northern Nevada, and at stations in interior and northwest parts of Washington. Trace of snow was reported on the ground in the Alleghany Mountains to extreme western North Carolina, in central and northern parts of Ohio, Illinois, Missouri, and Kansas, in the mountains of west-central New Mexico, in central and northern parts of Utah and Nevada, in northeastern California, and extreme southern Oregon.

The first snow of the season was reported as follows: 4th, Strawberry Plains, Tenn. 6th, Paris, Tex. 7th, Tuscumbia, Ala. 10th, Plain Dealing, La. 12th, Murphy, N. C.; Parksville and Sweetwater, Tenn. 13th, Toccoa, Ga.; Charleston, Tenn. 16th, Monroe, La.; Hattiesburg, Miss.; Devine and Mountain Springs, Tex. 17th, Greensboro, Scottsboro, and Selma, Ala.; Arkadelphia and Eldorado, Ark.; Lehigh and Purcell, Ind. T.; Clinton, Houma, Liberty Hill, Roseland, and Winnsboro, La.; Corinth, Miss.; Childress, Corsicana, Fredericksburg, and Mesquite, Tex. 18th, Cordova, Decatur, Demopolis, Mount Willing, Newburg, Oxanna, Sturdevant, and Talladega, Ala.; Adairsville, Diamond, Gillsville, Homer, Lafayette, and Union Point, Ga.; Amite, Farmerville, and Girard, La.; Columbus, Miss.; Highlands, N. C.; Albany, Duval, Eastland, Grape Vine, Llano, and Round Rock, Tex. 25th, Redding, Cal.; 26th, Fouts Springs and Iowa Hill, Cal.

MONTHLY SNOWFALL.

Monthly snowfall of 10 inches, or more, was reported as follows, and in states and territories where the maximum depth was below that amount the station reporting the greatest is given:

Alabama.—Lynn (b), 13.8; Gadsden, 13.5; Healing Springs, 13; Lynn (a), 13; Newburg and Tuscumbia (a), 11; Florence (b), 10.7; Decatur (a), Fayette, and Florence (a), 10. *Arizona*.—Flagstaff, 18. *Arkansas*.—Hot Springs, 20; Little Rock, Lonoke, and Mount Nebo, 13; Kirby and Stuttgart,

12; Brinkley, Madding, and Pine Bluff, 11; Russellville, 10.5; Conway, 10.2; Dallas, Dardanelle, Helena (b), and New Gascony, 10.

California.—Summit, 79; Edmanton, 51; Emigrant Gap, 35; Cisco, 32; Sisson, 28; Susanville, 24; Truckee, 23; Boca and Dunsuir, 22; Fort Bidwell, 21.2; Delta, 16.5; Shasta, 11.5; Sims, 11. *Colorado*.—Pikes Peak, 58.3; Climax, 46; Cumbres, 35; Breckenridge, 24.5; Red Cliff, 19; Montrose, 16; Rico, 14.8; Ward District, 14.5; Arboles, 14; Alma, 13.5; Manhattan, 10. *Connecticut*.—Colchester, 22; North Franklin, 19; New Haven, 18.1; Wallingford, 17; Falls Village, 16.8; New Hartford (a), 16.5; Lebanon, 16; New London, 15.3; North Grosvenor Dale, Storrs, and West Simsbury, 14; Middletown, 13.5; Canton, 13; Norwalk (b) and Southington, 12.5; Hartford (b), 12; New Hartford (b) and Voluntown, 10.

Delaware.—Seaford, 17; Millsboro, 12.7; Dover, 12.1. *District of Columbia*.—Washington, 11.3. *Georgia*.—Dahlonega, 18; Athens (a), 16; Toccoa, 13.5; Rome, 12.5; Diamond, 11.4; Adairsville and Gillsville, 11; Canton, Elberton, and Lafayette, 10. *Idaho*.—Ruthburg, 21; Garden Valley, 20; Martin, 19; Kootenai, 12; American Falls, 10. *Illinois*.—Ottawa and Rockford, 24.5; Oswego, 17.6; Fort Sheridan, 17.2; Winnebago, 17; Dixon and Lagrange, 15.5; Chicago, 15.2; Aurora (b), 14.6; Hennepin, 14.5; Watseka, 14; Aurora (a), 12.5; Sycamore, 11.7; Palestine, 11.2; Riley, 11.1; McLeansboro and Walnut, 11; Martinsville, 10.8; Rantoul, 10.7; Kankakee, 10.

Indiana.—Michigan City, 45.5; Columbia City, 29.3; Shelbyville, 26; Hawpatch, 25.5; Butlerville, 25.3; Angola, 23.7; Logansport (b), 23.2; Marion, 23; Hammond and Mauzy, 21; Farmland, 20.8; Point Isabel, 20.5; Vevay, 20.4; Franklin, 20; Kokomo, 17.7; Muncie, 17.5; Cambridge City and Lafayette, 17.2; Connersville, 15.5; Ashboro and Irvington, 15; Indianapolis, 14.3; Columbus, 14.2; Veedersburg, 13.5; Crawfordsville, 13; Rockville, 12.7; Worthington, 11.6; Jeffersonville, 11.2; Princeton and Union City, 10. *Indian Territory*.—Lehigh, 12. *Iowa*.—Hawkeye, 34.2; Havelock, 34; Blakeville, 22; Dubuque, 18; Clinton, 15.3; Charles City, 15; Fulton, 14.5; Mechanicsville, 14.3; Independence, 14.2; Cedar Falls, Grand Meadow, and Tipton, 14; Fayette, 12.2; Estherville and Hopkinton, 12; Denison, 11.5; Delaware, 10.4; Cresco and Vinton, 10. *Kansas*.—Columbus and Oswego, 3.

Kentucky.—Versailles, 22.9; Hendricks, 22.5; South Fork, 18; Shelby City, 15.8; Carrollton, 14; Caddo, 12.5; Shelbyville, 12.2; Catlettsburg, 12; Harrodsburg, 11.9; Lexington, 11.3. *Louisiana*.—Plain Dealing, 4. *Maine*.—Calais, 20; Farmington, 19.2; Indian Stream, 18; Kents Hill, 15.6; Lewiston, 15.2; Cornish, 15; Bar Harbor, 14; Houlton, 13.2; East Machias, 12; Portland, 11.9; Kennebec Arsenal, 11; Fairfield, 10. *Maryland*.—Oakland, 36; Sunnyside, 31.5; Boettcherville, 19.5; Cambridge, 14.2; Denton, 13.2; Jewell and Salisbury, 12; Woodstock, 11.7; New Market, 11.5; Barren Creek Springs and Fenby, 11.2; Glyndon, 10.

Massachusetts.—Monroe, 25; Beverly Farms, 24; Salem, 23; North Billerica, 22; Concord (a) and Somersett, 21.5; Florida Mountain, 20.5; Taunton (a), 20; Mansfield, 19; Wayland, 18.5; Woods Holl, 18.3; Framingham, Gilbertville, Roberts Dam, Taunton (d), and Vineyard Haven, 18; Taunton (b), 17.8; Ashland, Fall River, and Monson, 17; Williamstown, 16.2; Ludlow Center and Wakefield, 16; Roxbury, 15.9; Hyannis 15.5; Andover, 15.4; Westboro, 15.2; Leicester, 15.1; Blue Hill, Lawrence, Milton, Randolph, and Webster, 15; Springfield Armory, 14.8; Boston, 14.6; Chestnut Hill, 14.5; Amherst (a), 14.2; Middleboro, 14; Provincetown, 13.8; Nantucket, 13.2; Hingham and New Bedford (a), 13; Amherst and Fiskdale, 12.5; Fitchburg (a and b), Groton (a), Mount Nonotuck, and New Bedford (b), 12; Mystic Lake, 11.5; South Dennis and Worcester (b), 11; Cambridge (a) and Plymouth, 10.

Michigan.—Benton Harbor, 49.5; Bear Lake, 47.6; Berrien Springs (b), 42; Ivan, 41.5; Boon, 40.6; Berrien Springs (a), 39.1; Charlevoix, 37.5; Hart, 37; Grand Haven, 36.5; Caldwell, 36; Harrisville, 35.1; Vandalia, 34.8; Bellaire, 34.6; Brown City, 33.2; Harbor Springs and Thornville, 32; Gaylord, 31.9; McMillan, 31; Berlin, 30; Saint Ignace, 29; Grayling, 27.5; Glenwood, 27.3; Ann Arbor, 27.1; Jeddo, 26.5; Washington, 26; Harrison, 25.7; Highland Station, 25.4; Manistee, 25.2; Allegan, 24.8; Calumet, 24.5; Fitchburg and Mottville, 23.8; Detroit and Ypsilanti, 23.1; Mayville and Noble, 23; Marquette, 22.7; Birch Run and Escanaba, 22; Alma and Lake City, 21; Port Huron, 20.7; Evart, 20.6; Howell, 20.5; Hastings, 20.2; Marshall, 20; Alpena, 19.7; Birmingham, Hayes, and Rawsonville, 19; Arbel, Hanover, Olivet, and Ovid, 18; Lansing, 17.9; Flint, 17.6; Bronson, 17; Fairview, 16.4; Grape, Hillsdale, Kalamazoo, and Parkville, 16; Madison, 15.9; Ball Mountain, 15.7; Cheboygan, 14.8; Clinton and Sault Ste. Marie, 14.2; Adrian, 12.9; Williamston, 12.5; Paris, 12.2; North Marshall and Sand Beach, 12.

Minnesota.—Sandy Lake Dam, 37.2; Pine River, 24; Maple Plain, 20.3; Saint Oloff, 20.2; Northfield, 19.8; Moorhead, 18.4; Leech Lake, 17.1; Kinbrae and Pokegama Falls, 17; Farmington, 16; Montevideo, 14.8; Alexandria (b), 14.5; Lake Winnibigoshish, 14.2; Winona, 13.5; Collegeville, 13.4; Sheldon, 13.2; Cambridge and Saint Charles, 12.5; Alma City, 12.4; Minnesota City, 12; Minneapolis, 11.4; Grand Meadow, 11.2; Easton, 11; Bird Island, 10.8; Duluth, 10.6; Saint Paul, 10.2. *Mississippi.*—Booneville and Water Valley, 14; Pontotoc, 12; University, 11; Clarksdale, Corinth, and Okolona, 10. *Missouri.*—Miami, 7.2. *Montana.*—Martinsdale, 26; Fort Missoula, 19.5; Fort Logan, 18; Helena, 17.2; Cokedale, 17; Boulder and Choteau, 15; Hogan, 13; Havre, 12.6; Camp Poplar River, 12.1; Elk Park, 12; Deer Lodge City, 11.6.

Nebraska.—Plattsmouth, 6.5. *Nevada.*—Palmetto, 30; Stofiel, 27; McDermitt, 25.5; South Camp, 23.5; Elko, 22; Winnemucca, 19.2; Virginia City, 19.1; Halleck, 19; Palisade, 18; Carlin, 17; Cranes Ranch, 16; Elko (near), Fenelon, Verdi, and Wells, 15; Tecoma, 14.5; Humboldt, 13.5; Toano, 12.7; Mill City, 12; Lower Ranch, 11; Ely, 10. *New Hampshire.*—North Conway, 19; Plymouth, 18; East Canterbury, 17.2; Berlin Mills, 16; Sanbornton, 13.5; Grafton, 13; Dublin, 12.5; Concord (a), Keene, and Peterboro, 12; Walpole, 11.8; Manchester, 11.4; Nashua, 11; Brookline and Newton, 10.5.

New Jersey.—Cape May, 29.6; Toms Rivers, 29.5; South Orange, 28.5; Barnegat, 27.5; Oceanic and River Vale, 24; Bayonne, 22.4; Junction, 22.3; Franklinville, 22.2; Asbury Park, 22; Lambertville, 21.5; Rancocas, 21.2; Bridgeton, Moorestown, and Paterson, 21; Billingsport L. H., 20.5; Newark (b), 20.4; Beverly, 19.9; Blairstown and Dover, 19.5; Butler, 19.1; Newark (a) and Trenton, 19; Tenafly, 18.5; Egg Harbor City and Plainfield, 18.1; Newton, 18; Woodbine, 17.6; Highland Park, New Brunswick, and Salem, 17.5; Gillette and Whiting, 17; Hightstown, 16.7; Locktown, 16.5; Friesburg, 16.1; Pensauken, 15.5; Atlantic City, 15.1; Ocean City, 15; Imlaystown, 14; Penns Grove, 11; Hammonton, 10.7; Belvidere, 10. *New Mexico.*—Chama, 18.8.

New York.—Oswego, 41.8; Eden Center, 37; Le Roy, 30.5; Alfred Center, 28; Turin, 27.2; Utica, 23.2; Number Four, 22.7; Middletown, 20.5; New York, 20.3; Palermo, 20.2; Oxford, 19.7; Glens Falls, Humphrey, and Madison Barracks, 19.5; South Canisteo, 19.4; Boyds Corner, 19.2; Albion, 19; Angelica, 18.5; Port Jervis, 17.5; Lockport and Setauket, 17; Carmel, 16.8; Factoryville, 16.6; Baldwinville, 16.5; Hon-eymead Brook, 16.4; Rochester, 15.9; North Hammond, 15.7; Rondout, 15.5; New Lisbon and Wedgwood, 14.8; Binghamton, 14.7; Gloversville, 14.6; Arcade, 14.4; Buffalo, 14.1;

Brookfield, Constableville, Potsdam, and Willets Point, 14; West Point, 13.8; Canton, 13.4; Malone, 13.3; Ogdensburg and Victor, 13; Axton, 12.8; Perry City, 12.2; Addison, 11.3; Geneva and Plattsburg Barracks, 11; Ithaca, 10.7; Lebanon Springs, 10.5; Lowville, 10.

North Carolina.—Littleton, 24; Bryson City, 23; Southern Pines, 22.5; Bakersville, 21.5; Louisburg, 20.2; Experimental Farm (near Raleigh), 20.1; Pittsboro and Raleigh, 20; Murphy, 19; Horse Cove, 18.5; May, 18; Chapel Hill, Highlands, Lillington, and Soapstone Mount, 17.5; Asheville and Saxon, 16.5; Weldon, 15.8; Currituck Inlet, 15.1; Roxboro, 14.2; Willetton, 14; Smithfield, 13.6; Bailey, Charlotte, Marion, and Mount Pleasant, 13.5; Douglas, 13.3; Mount Airy, 11.2; Lewiston, 11; Flat Rock and Salisbury, 10.5; Mount Holly, 10. *North Dakota.*—Fort Buford, 23.5; Medora, 21.5; Grafton, 17.5; Ellendale, 17.2; Grand Forks, 17; Saint John, 15.7; Lakota, 13.7; Churchs Ferry, 13; Mayville and Milton, 10.

Ohio.—Wheeler, 65; Weymouth, 36; Bissella, 31.7; Sandusky, 29.8; Garrettsville, 26.3; Strongsville, 26; Ashland, 25.5; North Lewisburg, 25; Wauseon, 24.5; Ridgeville Corners, 23.6; Jacksonboro, 23; Caledonia, 22.8; Colebrook and Orangeville, 22.5; Hillhouse, 22.3; Benton Ridge, 21.7; Auburn, 21.4; Campbellstown, 21; Ellsworth, 20.7; Levering, 20.2; Hackney and McLuney, 19; Mansfield, 18.7; Bement, Cambridge, Elyria, Hedges, and Van Wert, 18; Cherry Fork, 17.5; Tiffin, 17.2; Canton and Kenton, 17; Milfordton, 16.5; Cincinnati, 16.3; New Berlin, 16.2; Rittman, 16.1; Bellevue and Lordstown, 16; Wooster (b), 15.6; Green Hill, 15.4; Frankfort, Mountville, Portsmouth (a), and Sidney, 15; Columbus, 14.7; Sharon Center, 14.6; Carrollton, 14.5; Gratiot, 14.3; Pataskala, 14.1; Tyrone, 14; Cardington, 13.8; Coalton, 13.1; Cleveland, 12.8; Demos, 12.7; Big Prairie, 12.5; Greenfield, 12.2; Hillsboro and Plattsburg, 12.1; Bethany, Camp Dennison, and Clarksville, 12; Walnut, 11.3; Leipsic, 11.2; Chicago, 11; Toledo, 10.9; Annapolis, 10.6; Lowell, 10.5; Royalton, 10.4.

Oklahoma.—Anadarko, 7. *Oregon.*—Siskiyou, 26; Forest Grove, 22; Albany (b), East Portland, and Lafayette, 19; Le-land, 18; McMinnville (a), 17.9; Sheridan, 17.5; Corvallis (a), 17; Junction City, 16; Eugene, 15.9; Beulah, Hood River (near), McMinnville (b), and Silver Lake, 15; Albany (a), 14.5; Albany (c), Comstock, and Springfield, 14; New-berg, 13.5; Burns, 13.4; Aurora, Corvallis (b), and Mon-mouth, 13; Lone Rock, Salem (a), and Williams, 12; Port-land, 11.8; The Dalles, 11; Astoria, 10.8; Silverton, 10.2; Mount Angel, 10.

Pennsylvania.—Blue Knob, 40.5; Grampian, 39; Saegers-town, 33.8; Du Bois, 33.5; Corry, 32; Salem Corners, 29.7; Quakertown, 27.5; Newcastle, 27; Coopersburg, 26.5; Stoyes-town, 25; Easton, 23.6; East Mauch Chunk, 23.5; Phoenix-ville, 23.4; Blooming Grove, Johnstown, and Oil City, 22; Girardville, 21.5; Philadelphia, 20; Erie, 19.8; Drifton, 19.7; Dyberry, Emporium and Uniontown, 19.5; Wellsboro, 19.2; Freeport, Honesdale, West Newton, and Wysox, 18; Coates-ville, 17.7; Pottstown, 17.5; South Eaton, 17; Wilkesbarre, 16.6; Lock Haven, 16.5; West Chester, 15.8; Pittsburg, 15.2; Lock No. 4, 15; Gettysburg, 14.5; Greensboro, Parker, Swarth-more, and Warren, 14; Kennett Square and Saltsburg, 13; Lancaster, 12.5; Le Roy, 12.3; State College, 11.5; Hunting-don, 11.3; Ridgway, 11.2; Lebanon, 10.7; Hollidaysburg, 10.

Rhode Island.—Kingston (b), 19; Providence (a), 18; Lons-dale, 17.5; Bristol, 15.5; Kingston (a) and Providence (c), 14.5; Olneyville and Pawtucket, 14; Providence (b), 13; Nar-ragansett Pier, 12. *South Carolina.*—Cheraw (a), 14; Green-ville, 12.9; Yorkville, 10.5; Anderson, 10. *South Dakota.*—Britton and Frankfort, 10.5; Rosebud, 10. *Tennessee.*—Rogers-ville (a), 26; Tazewell, 25.3; Springdale, 21; Greeneville, 19.1; Newport, 19; Rogersville (b), 17.1; Chattanooga, 15.8; Kings-ton and Rugby, 12.5; London, 12; Lookout Mountain, 11.6;

Clipton, 11. *Texas*.—Arthur City, 6.5. *Utah*.—Scofield, 18.2; Castle Gate, 15.8; Grouse Creek, 14.1; Richfield, 14; Heber, Lake Park, and Promontory, 13; Levan, 12.8; Blue Creek, 12.5; Kelton and Terrace, 12.

Vermont.—Jacksonville, 23.2; Chelsea, 18; Brattleboro, 16; Irasburg, 15.5; Strafford, 15; Woodstock, 14; Vernon, 13.5; Hyde Park, 13.2; Northfield and Hartland, 12.7; Norwich and Saxtons River, 12; Wells, 11; Simonsville, 10. *Virginia*.—Marion, 30; Abingdon, 27; Emporia, 24; Richmond (a), 21.5; Spottsville, 21; Big Stone Gap and Wytheville, 20; Ashland and Cape Henry, 17; Birdsnest, 15.4; Norfolk, 13.7; Petersburg, 13.5; Clarksville, 13; Danville and Warsaw, 12.5; Bedford City and Staunton, 12; Hot Springs, 11.5; Nottoway, 10.

Washington.—Port Angeles, 33.2; Port Crescent, 32.4; Vashon, 28.5; Aberdeen, 26; Madrone, Pine Hill, and Tacoma, 20; Silver Creek, 19; Fort Spokane, 18.1; Seattle, 15; Chehalis, 14; Centralia, 13.9; Olympia, 13.7; Fort Townsend, 13.2; Fort Canby, 11.6; Colfax, 11.5; Fort Simcoe and Waterville, 10. *West Virginia*.—Kingwood, 30; Rowlesburg, 27; Grafton, 25.2; Nuttallburg, 24; Parkersburg, 23.6; Charleston (a) and Glenville, 23; Buckhannon (a), 22.1; Elkhorn, 22; Davis and New Martinsville, 21; Bluefield, 20; Spencer, 19; Morgantown (b), 18.6; Philippi, 18; Point Pleasant, 17.8; Fairmont, Morgantown (a), and Wheeling (a), 17; Tannery, 15.5; Central Station and Wheeling (b), 15; Ella and Huntington, 14.

Wisconsin.—Columbus, 28; Depere, 25.8; Prairie du Chien, 22; Koepenick and Oshkosh, 21; Rhinelander, 20; Lancaster, 19.7; New Holstein, 19.6; Chippewa Falls, 19; Weston, 18.5; Fond du Lac and Hudson, 18; Amherst and Green Bay, 17.5; Crandon, 17.4; Manitowoc, 17.3; Grantsburg, 17.2; Beloit, Hammond, Hillsboro, and Osceola, 17; Westfield, 16.8; Oconomowoc and Raymond, 16.5; Oconto, 16.4; Valley Junction, 15.8; Waukesha, 15.6; Baraboo, 15.5; Wauertown, 15.2; Sparta (b), 15; Madison, 14.8; La Crosse, 14.6; Menomonie, 14.3; Meadow Valley and Portage, 14; Black River Falls and Harvey, 13.8; Sharon, 13.5; Reedsburg, 13.4; Beaver Dam and Shawano, 13.2; Eau Claire (a), 13.1; Bayfield, 12.6; Appleton and Barron, 12.5; Cadiz, 12.4; Janesville, 12.2; Pepin, 11.8; Mineral Point and Shell Lake, 11; Milwaukee, 10.7; Delavan and Viroqua, 10. *Wyoming*.—Fort Yellowstone, 18.4; Evanston, 13.

SLEET.

Description of the more severe sleetstorms is given under "Local storms." Sleet was reported as follows: 1st, Connecticut, Illinois, Kansas, Maryland, Massachusetts, Michigan, Mississippi, Missouri, New Hampshire, New Jersey, New

York, North Dakota, Ohio, Pennsylvania, Vermont, and Virginia. 2d, Illinois, Maryland, Pennsylvania, Tennessee, and Vermont. 3d, North Carolina and Tennessee. 4th, Montana, North Dakota, and South Dakota. 5th, Nebraska. 6th, Kansas, Missouri, Nebraska, and South Dakota. 7th, Alabama, Illinois, Kentucky, Nebraska, and South Dakota. 8th, Alabama and Kentucky. 9th, Alabama, Illinois, Indiana, and Missouri.

10th, Kansas, Kentucky, Missouri, New Jersey, and Washington. 11th, Georgia, Illinois, Kentucky, Mississippi, North Carolina, and Tennessee. 12th, Georgia, Illinois, Kansas, Kentucky, Massachusetts, Missouri, North Carolina, South Carolina, and Tennessee. 13th, Georgia. 14th, Alabama, Georgia, Louisiana, Mississippi, Missouri, and Tennessee. 15th, Georgia, Nevada, Oregon, and Virginia. 16th, Nevada and Oklahoma. 17th, Florida, Georgia, Illinois, Louisiana, Michigan, Mississippi, South Dakota, and Texas. 18th, Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, and Texas.

19th, Alabama, Florida, Georgia, Louisiana, Mississippi, Missouri, South Carolina, and Texas. 20th, Michigan, Missouri, North Dakota, and South Carolina. 21st, Michigan, Missouri, and Oregon. 22d, Illinois, Michigan, Missouri, Washington, and Wisconsin. 23d, Iowa. 24th, Illinois, Indiana, Michigan, Oregon, Virginia, and West Virginia. 25th, Illinois, Kansas, Michigan, Missouri, Nebraska, Oregon, Pennsylvania, and Washington. 26th, Illinois, Indiana, Indian Territory, Kansas, Missouri, Nebraska, Oklahoma, and Oregon. 27th, California, Illinois, Indiana, Indian Territory, Iowa, Kansas, Michigan, Missouri, Nevada, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, and Wisconsin.

28th, California, Connecticut, Illinois, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Ohio, Oregon, and Wisconsin. 29th, Arkansas, Connecticut, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Vermont, Washington, and Wisconsin. 30th, California, Colorado, Illinois, Indiana, Iowa, Kansas, Maryland, Michigan, Missouri, Nevada, New Jersey, Ohio, Oregon, and West Virginia. 31st, Colorado, District of Columbia, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, New Jersey, New York, Ohio, South Dakota, Utah, Washington, and Wisconsin.

HAIL.

Hail was reported on the 10th in Oregon; on the 12th in Alabama and North Carolina; on the 27th in California; and on the 28th in Kansas.

WINDS.

The prevailing winds in January, 1893, are shown on Chart II by arrows flying with the wind. In New England and the upper Mississippi valley, and on the middle-eastern slope of the Rocky Mountains, the winds were generally from west to north; in the middle Atlantic states, and on the south Pacific coast, from the northwest; in the south Atlantic and east Gulf states, the Ohio Valley and Tennessee, the Lake region, and on the northeast slope of the Rocky Mountains, from southwest to northwest; over the Florida Peninsula, from northwest to northeast; in the Missouri Valley, from northwest to north; over the middle plateau region, from northeast to southeast; over the northern plateau region, from southeast to south; along the north Pacific coast, from east to south; along the middle Pacific coast, from the southeast; and in the west Gulf states, on the southeast slope of the Rocky Mountains, and over the southern plateau, variable.

HIGH WINDS (in miles per hour).

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 1st, 80, nw., at Pikes Peak, Colo.; 50, se., at New London, Conn.; 50, s., at Kittyhawk, N. C. 2d, 60, se., at Woods Holl, Mass.; 52, s., at Boston, Mass. 3d, 52, sw., at Havre, Mont.; 50, sw., at Amarillo, Tex. 5th, 60, ne., at Block Island, R. I. 6th, 70, ne., at Block Island, R. I.; 68, e., at Tatoosh Island, Wash.; 54, nw., at Kearney, Nebr. 7th, 57, e., at Tatoosh Island, Wash. 10th, 98, w., at Pikes Peak, Colo.; 51, nw., at Woods Holl, Mass. 11th, 54, nw., at Kearney, Nebr.; 52, n., at Bismarck, N. Dak.; 50, nw., at Dodge City, Kans. 13th, 96, w., at Pikes Peak, Colo.; 51, nw., at Colorado Springs, Colo.; 50, w., at Cheyenne, Wyo. 14th, 72, e., at Tatoosh Island, Wash.; 68, se., at Fort Canby, Wash. 15th, 76, e., at Tatoosh Island, Wash.; 66, se., at Fort Canby, Wash. 19th,